

The University of Iowa

Creating Partnerships Across Iowa in Economic Development

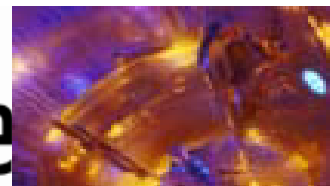
*Meredith Hay, Ph.D.
Vice President for Research*

*Thomas R. Sharpe, Ph.D.
Associate VP for Economic Development*

EDUCATE

INNOVATE

PARTICIPATE



Overview of Presentation

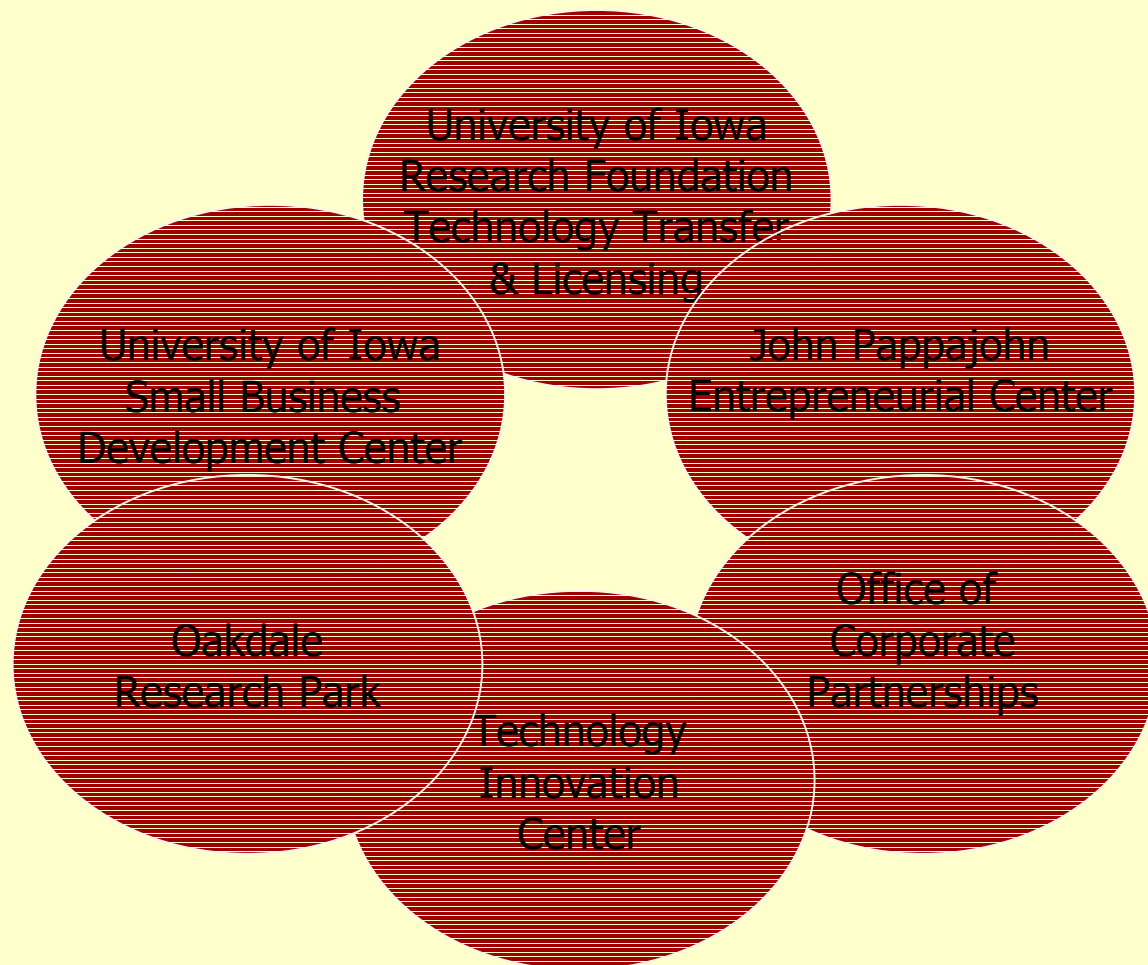
- Overview of Programs
 - IOWA Centers for Enterprise
 - Oakdale Research Park
 - Technology Innovation Center
 - Center for Advanced Drug Development
- Review of GIVF and Battelle Projects
- Highlighted Projects
 - UI Life Sciences Business Incubator (BioVentures Center)
 - Optherion

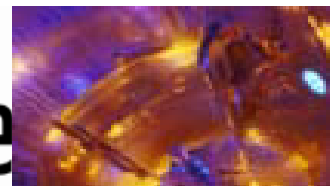




What are the IOWA Centers for Enterprise ?

- An integration of existing economic development activities at The University of Iowa
- Providing a comprehensive program that promotes economic development and technology transfer.
- Housed together in new facilities at center of the campus, improving access and integration of services.





How are the Economic Development Appropriations used at the University of Iowa?

☐ The total Economic Development Appropriation in FY2008 to The University of Iowa was \$247,005.

These funds provide part of the support we need for:

☐ Operation of **Oakdale Research Park** and its **Technology Incubation Center** where new businesses can be established.

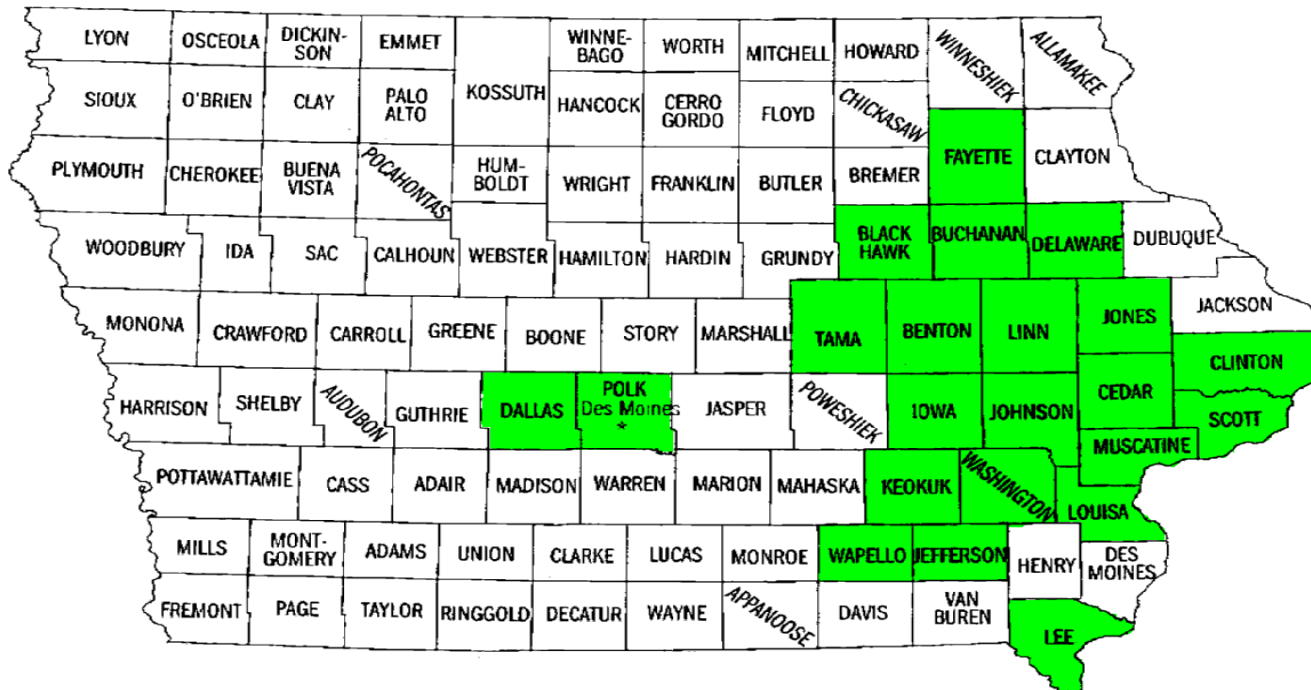
☐ Operation of one important “magnet laboratory” - **Center for Advanced Drug Development** (CADD) that is of special interest to attracting and supporting biotech and pharmaceutical companies.

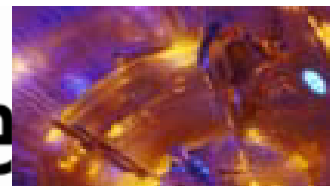


- **Forty active Iowa companies** are affiliated with the research park and innovation center.
- These companies plus 4 UI anchor labs employ **almost 1,800 employees** earning an average salary of **nearly \$60,000**. **Annual payroll of more than \$100 million**.
- **Labor-shed includes 21 Iowa counties and 65 Iowa communities**--_approximately one-fifth of Iowa.
- **New Life Sciences Incubator** under construction.



FY08 Labor Shed for Affiliated Companies and Labs UI Oakdale Research Park and Technology Innovation Center





How are the GIVF Appropriations used at the University of Iowa?

- The total GIVF appropriation (plus 1:1 match) in FY2008 to The University of Iowa was \$1.925M.

These funds provide part of the support we need for:

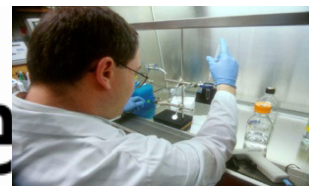
I-START: Immediate or short term needs designed to directly facilitate university-private sector partnerships in entrepreneurship and the creation of new companies and jobs in Iowa.

I-GROW: Middle to long term commitments needed to promote and sustain high tech entrepreneurship in the region and build new networks of technical-financial-business capabilities.

EDUCATE

INNOVATE

PARTICIPATE



Phase I Program: I-START (\$1,500,000).

- Operations support for IOWA Centers for Enterprise
- Gap funds for new UI spin-out opportunities
- New life sciences incubator facility
- cGMP facilities for Center for Biocatalysis and Bioprocessing
- Facilities for Optherion (leased by the company)
- Research Park business & infrastructure development
- Entrepreneurs-in-residence to advance UIRF commercialization efforts



Gap Funding for Commercialization

- Low Cost Retinal Camera (iOptics)
- Non-invasive Glucose Detection (ASL Analytic)
- Drugs for Cancer Treatment (Terpenoid Therapeutics)
- Cell Therapy for Human Diseases (RepGenix)
- Animal Models of Human Diseases (Exemplar Genetics)
- Neurological Diseases and Cancer (Newco)
- Touch Screen Device (OMR Sensors)
- Breathalyzer for Glucose Monitoring (Znovation)

18 Companies or "Pre-companies" in place with GIVF, Battelle assistance

Entrepreneurs-in-Residence

Rich Lineback
(12/07)

Asoyia – Exec Mgmt
Pearson – VP
Software and Engineering Expertise

Bob Karr, MD
(Agreed)

2 Biotech Start-ups
Pfizer – Sr. Strategy Executive
UI, Wash U Professor (18 yrs)

Scheer & Co
(Agreed)

Development Company
Led Optherion Deal

Randy Weiss, PhD
(6/07)

Triathalon Medical Ventures Partner
Development Company

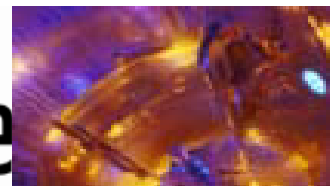
EDUCATE

INNOVATE

PARTICIPATE

I-START New Ventures Successes

- Optherion Closed \$37M Series A, Hired CEO
- Terpenoid CEO (Bob Karr) signed on; will lead Series A Phase 1 STTR and Phase 1 SBIR awards
- ASL Anal. \$1M NIH STTR Grant
- Santos Exec-in-Residence hired to lead effort



How are the Battelle Appropriations used at the University of Iowa?

- The total "Battelle" appropriation in FY2007 to The University of Iowa was \$8.41M.

\$2,000,000 For creation of an endowed entrepreneurial professorship- and/or to attract world-class, entrepreneurial talent in the core Battelle platforms.

\$2,720,000 To develop a new Technology Incubation Center and Research Park at the Oakdale Research Campus.

\$3,690,000 For continued investments in the development of core platforms and expansion of the "Gap/Seed Fund" program.



Battelle Projects

- Platform Proposals
 - Transgenic Cells for Targeted Therapy (RepGenix)
 - Peptides for Cancer Diagnosis/Treatment (BioSynthema)
 - Neuro-Musculoskeletal Training System (StandAide)
 - Bio-Imaging for FDA Clinical Trials (VIDA Diagnostics)
 - Swine Models of Human Disease (Exemplar Genetics)
 - Development of Cancer Therapeutic (Terpenoid Therapeutics)
 - Immune System Stimulators and Suppressors
 - Renovation of Laboratory Space for Center for Advanced Drug Development (Early Temporary Occupancy by NGI)
 - Santos--Simulated Human (Rockwell collaborator)
- Projects Leveraged ~10:1 with Federal, Private Support



UI BioVentures Center

- ✦ Public-Private Partnership with Ryan Companies, City of Coralville
- ✦ Two Wings
 - ✦ BioVentures Center (2 floors; 35,000 gsf)
 - ✦ Speculative Space (3 floors; 45,000 gsf)
 - ✦ UI Commits to 10,000 gsf of Spec Space
- ✦ Construction Schedule
 - ✦ Start: November 2007
 - ✦ Complete: October 2008





U of I BioVentures Center



EDUCATE

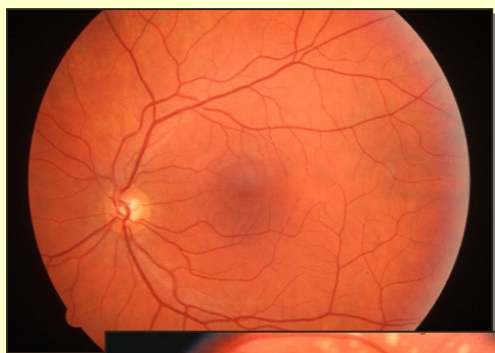
INNOVATE

PARTICIPATE



 U of I BioVentures Center

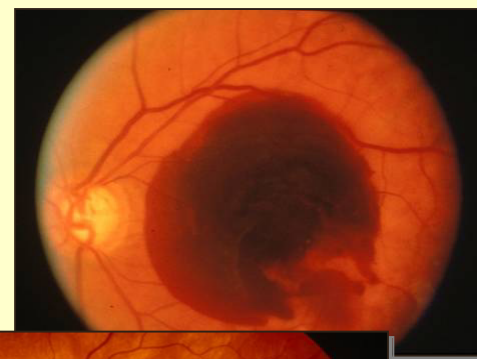
Toward the Development of Diagnostics & Therapeutics for Age-related Macular Degeneration



State of Iowa
Economic Development
Appropriations Subcommittee

Presented by
Gregory Hageman

Optherion, Inc.
University of Iowa Department
of Ophthalmology
and Visual Sciences



Financial Disclosure

Gregory S. Hageman

I have the following financial interests &/or relationships:

- OccuLogix, Inc.
- Optherion, Inc.
- Pfizer Ophthalmics

Age-related Macular Degeneration



- Leading cause of irreversible blindness in individuals over the age of 55; >50 million afflicted worldwide
- 8 million individuals at high risk in the US; approximately 100,000 high risk in Iowa

Age-related Macular Degeneration

Consequences & Cost

- Age-related deterioration of central vision



- Loss of independence & productivity
(reading, ambulation, recognition)

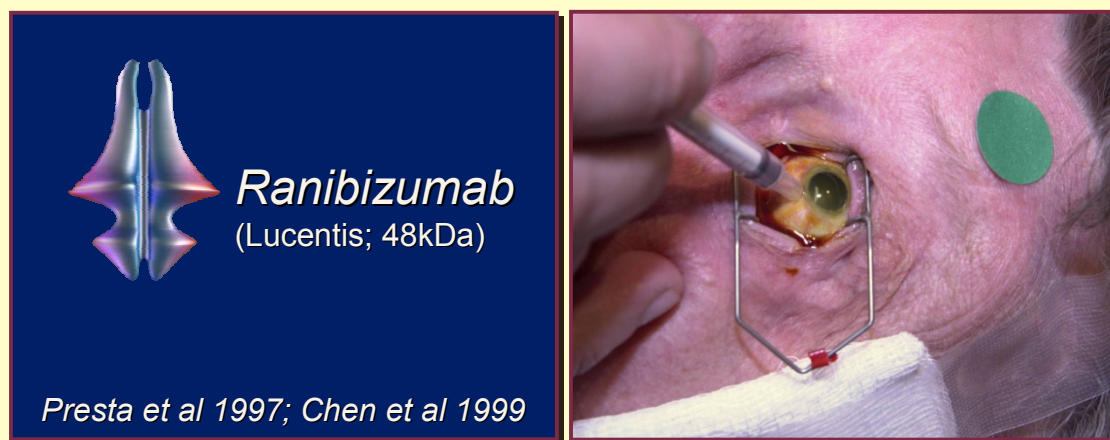
- Clinical depression
(~30% of afflicted individuals)



- Economic cost - increasingly larger share of the \$68B spent on visual impairment in the US
(~\$10B/yr UK; ~\$8B Australia)

Age-related Macular Degeneration

Treatment

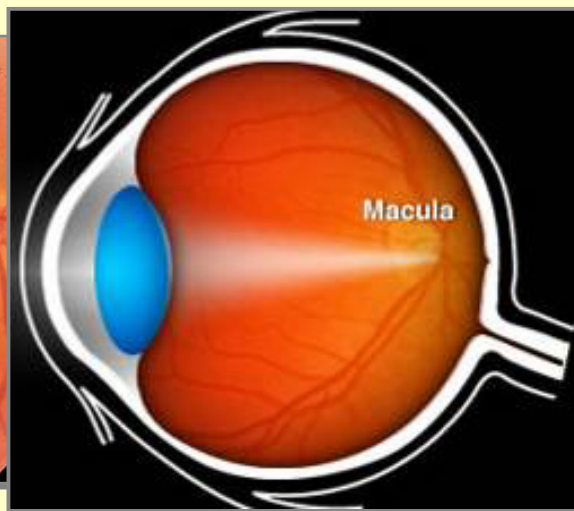


- Treatment is limited currently to “wet” AMD; visual improvement observed in ~30% of patients (monthly intraocular injections)
 - Wet market anticipated to be \$2.5B/yr by 2010
 - There are no treatments for early “dry” disease

Age-related Macular Degeneration

- Progressive deterioration of central vision is due to degeneration of the retinal macula

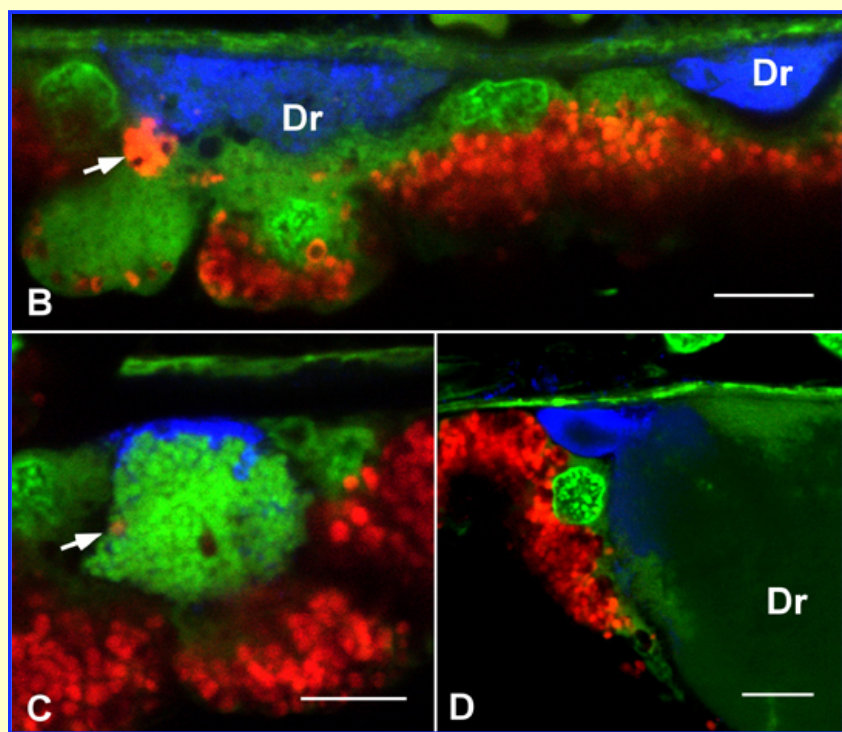
"Dry"



"Wet"

- Drusen are the hallmark pathological indicators of early disease

AMD & Drusen Composition



Studies conducted over the past 15 years provided compelling evidence that aberrant regulation of the complement system plays a central role in the development of early AMD

Iowa

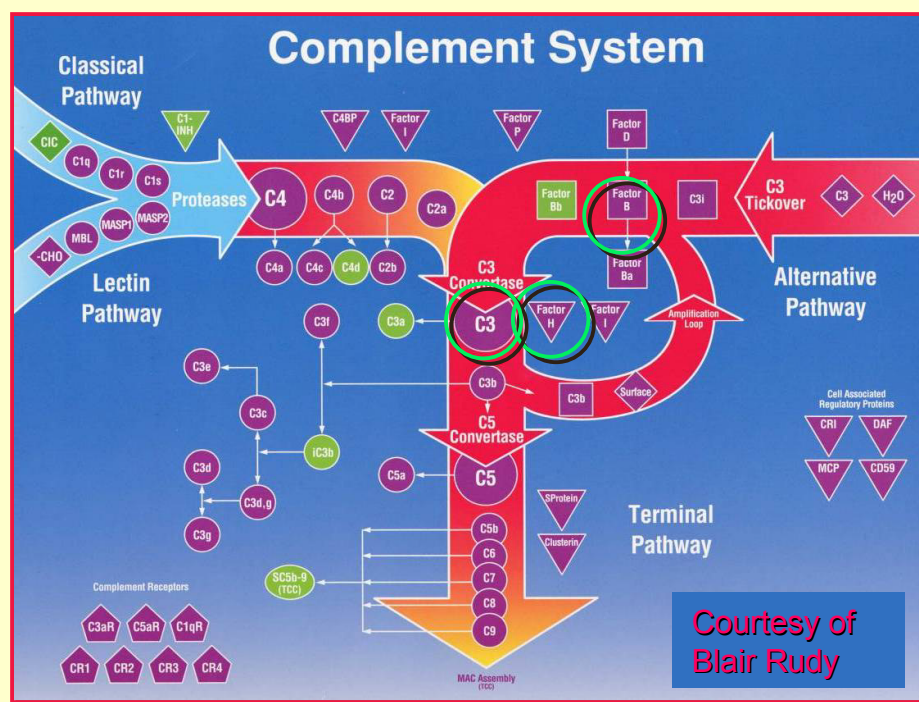
- Human eye donor repository
- IP activities (10 patent families & >75 active applications & issued patents)

Age-related Macular Degeneration

Recent genetic discoveries have substantiated these findings & provided new insights related the underlying basis of AMD

Complement Genes & AMD

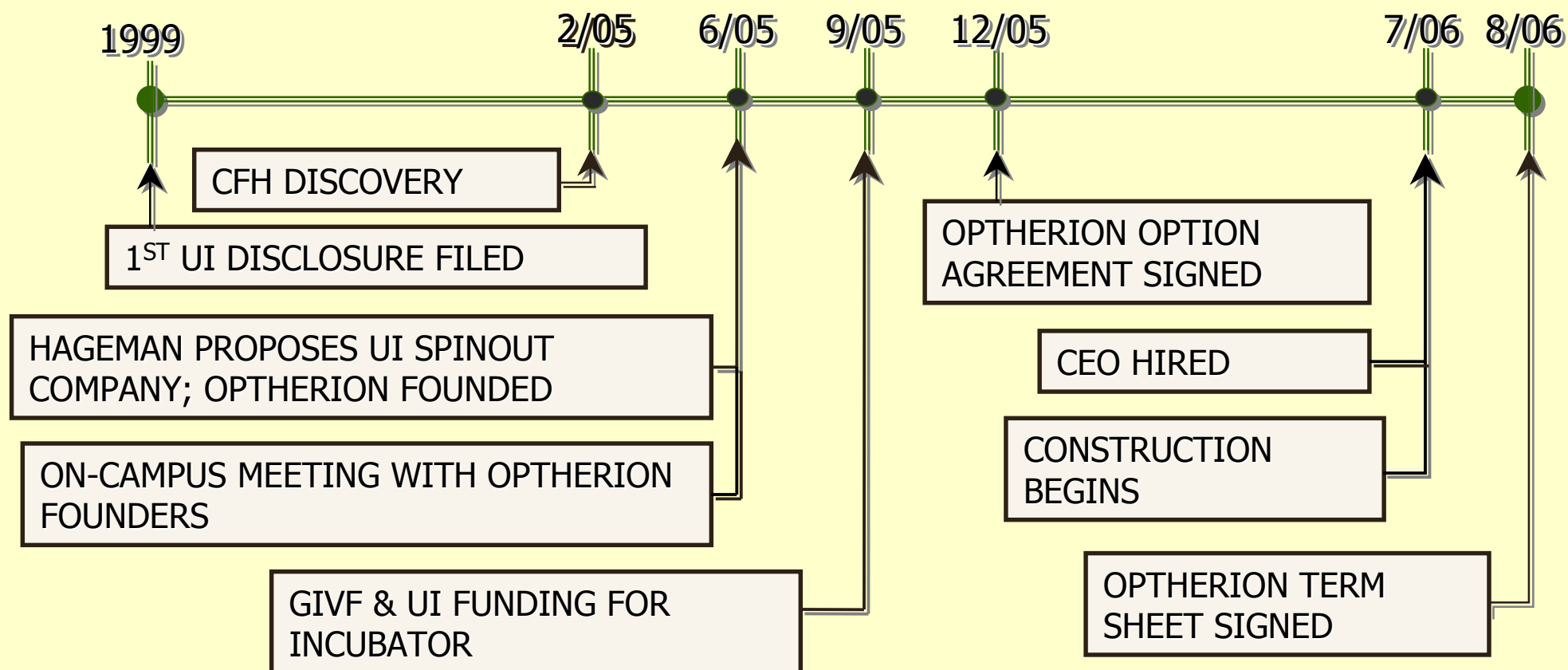
- *CFH*
- *CFH* point mutations
- *CFHR1/CFHR3* deletion
 - *CFB/C2*
 - *C3*



Complement Factor H (CFH)

- Variations within the *CFH* gene are associated with ~50% of AMD
 - CFH is associated with AMD in all races studied (*e.g.* Europe, Australia, Russia, Spain, India, Asia)
 - One “risk” & two “protective” forms of *CFH* exist
 - The “protective” form of CFH is protective in all conditions (all races & diseases examined)
 - The CFH risk form is likely associated with other diseases (stroke, AZ, CAD, MI)

UI & Optherion: Early Development



State of Iowa, UI & Optherion

Grow Iowa Values Fund

- \$3.6M used to purchase and renovate building on the Oakdale Research Park; increased collaboration and entrepreneurial development

Battelle Funds

- Iowa Entrepreneurial Endowed Professorship

State of Iowa, UI & Optherion

Other ROI

- Majority of UI IP licensed & reimbursed (UIRF cost >\$600K)
 - UI equity position in Optherion
- \$15M NIH "R24" grant received (subcontracts with 8 institutions)
 - \$3.2M Optherion Research Agreement with UI
- 15-20 new UI employees funded by NIH & Optherion grants
 - 10-15 new Optherion employees to be hired in Iowa

Financing



\$37M Series A Startup Financing

July 25, 2007

Investors & Board of Directors



David Scheer, Chairman
President,
Scheer & Company

Other Investors

- *Johnson & Johnson*
- *Biogen Idec*
- *Purdue Pharmaceuticals*
- *Pappas Ventures*



Colin Foster
President & CEO,
Optherion, Inc.



Sherrill Neff
Managing Partner,
Quaker BioVentures



Brian Halak, Ph.D.
Partner, Domain Associates



Ginger More
Independent Director

Executive Management



Colin Foster
President & CEO



Dr. Marlene Modi
VP, Preclinical



Dr. Lorah Perlee
VP, Diagnostics Tech. Ops



Dr. Gregory Hageman
CSO & VP, Disc. Research



Dr. Manju Patel
CMO



Dr. Haren Vasavada
VP, Process Sciences

EDUCATE

INNOVATE

PARTICIPATE

Optherion Facilities

Coralville, IA

New Haven, CT



- ~13,000 sq ft of combined office & laboratory space
- All renovations complete & facilities operational

EDUCATE

INNOVATE

PARTICIPATE

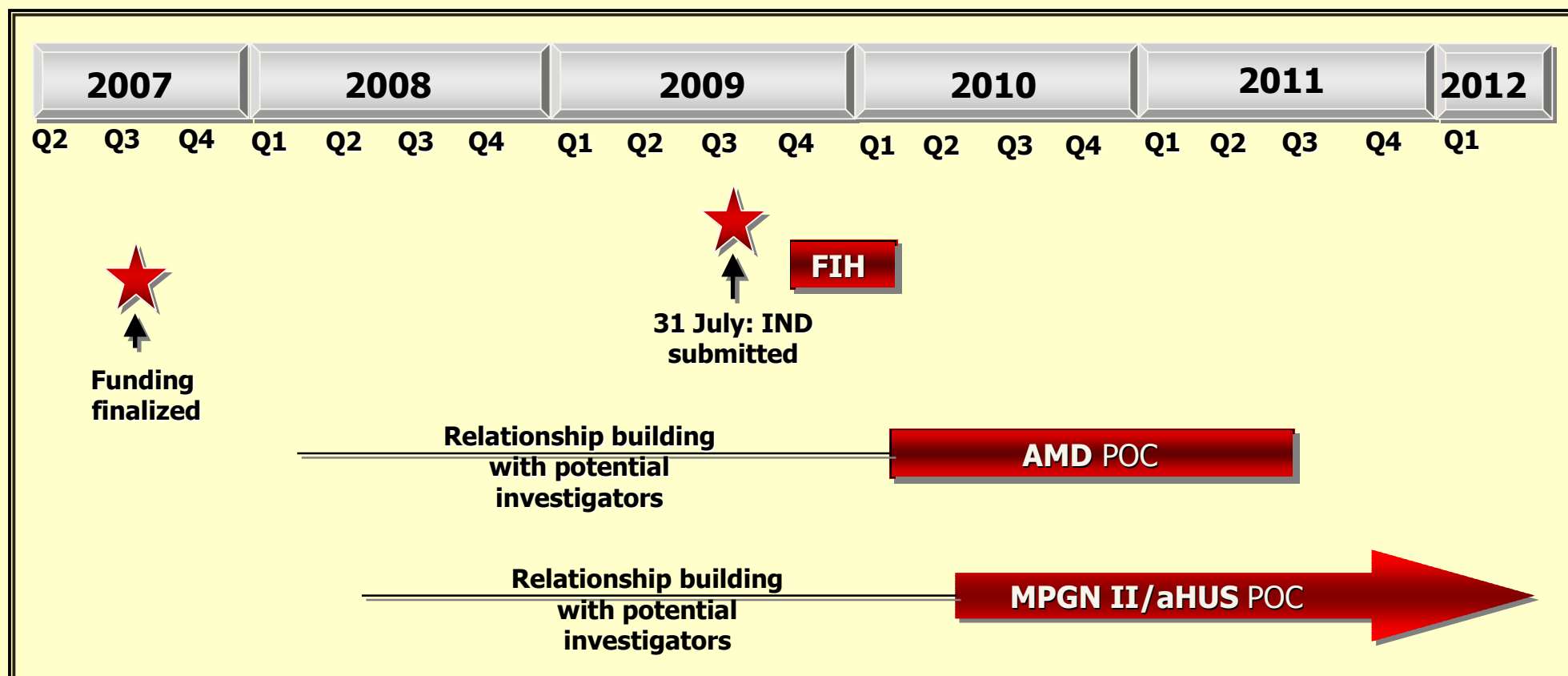
Optherion

Lead Therapeutic Premise/Focus

- Augmentation with recombinant “protective” CFH (rhCFH_{Protective}) to reestablish homeostatic regulation of the complement alternative pathway
- Immediate-term focus on IV administration of rhCFH_{pprotective} for MPGNII & AMD
 - ✓ MPGNII: orphan drug opportunity with renal endpoint
 - ✓ AMD: delay/prevent conversion to advanced disease
- Pipeline development with additional Rx opportunities

Optherion

Therapeutic Development Plan



EDUCATE

INNOVATE

PARTICIPATE

Optherion - Summary

- Unique therapeutic & diagnostic play -- backed by compelling science & clinical data -- in a large & untapped dry AMD market
 - Risk mitigating factors include:
 - ✓ Robust IP position with expansion possibilities
 - ✓ Multiple shots on goal in multiple markets
 - ✓ Experienced management team
 - ✓ Early cash generating potential with diagnostics
 - ✓ Biologic therapeutic with clinical evidence of efficacy with fast-to-market therapeutic opportunity
 - \$1B-plus/yr revenue generating business
- Broader opportunities within other CFH- & complement-related diseases

Thanks



- Donor families
 - Patients
 - Collaborators
- University morticians
- Eye bank & laboratory staff
- Departmental faculty and staff
- Local physicians, volunteers, state troopers & caregivers
 - Funding agencies



Contact us:

Meredith Hay

Vice President for Research

University of Iowa

201 Gilmore Hall

Iowa City, IA 52242

meredith-hay@uiowa.edu

Thomas R Sharpe

Associate VP for Economic Development

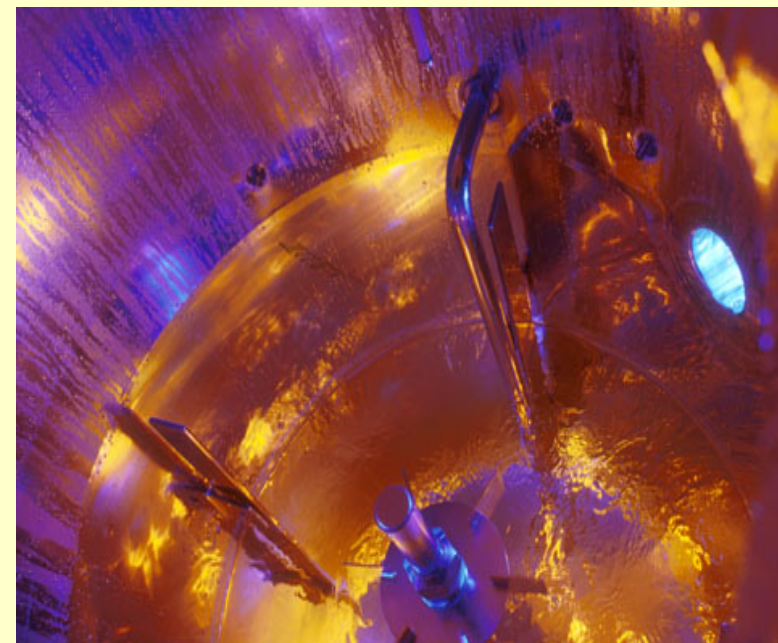
IOWA Centers for Enterprise

2660 University Capitol Center

200 S. Capitol Street

Iowa City, IA 52242

thomas-sharpe@uiowa.edu



A view inside one of the fermentors at the Center for Biocatalysis and Bioprocessing

EDUCATE

INNOVATE

PARTICIPATE